WHAT IS CLAIMED IS:

1. A Fresnel lens comprising a substantially polygonal focusing portion adapted to focus solar radiation to a polygonal area.

2. The lens of claim 1, wherein the Fresnel lens comprises a plastic injection molded lens which is adapted to be interlocked or snap fitted onto a backing structure adapted to support a photovoltaic cell.

3. A kit for forming a solar module, comprising:

a Fresnel lens comprising a substantially polygonal focusing portion adapted to focus solar radiation to a polygonal area; and

a first means for supporting a photovoltaic cell at a predetermined distance from the Fresnel lens such that the solar radiation is focused onto the photovoltaic cell.

4. The kit of claim 3, wherein the first means comprises a back support structure which has a first cross sectional area at a first portion adapted to be connected to the Fresnel lens and a second cross sectional area smaller than the first cross sectional area at a second portion adapted to support the photovoltaic cell.

5. The kit of claim 4, wherein the back support structure comprises a substantially pyramidal or a substantially conical support structure comprising a translucent, a diffusing or a Fresnel diverging material.

6. The kit of claim 4, wherein the back support structure comprises a diffusing material which is shaped to block the focused solar radiation from being visible from a back side of the back support structure, and wherein the back side of the back support structure faces away from the Fresnel lens.

7. The kit of claim 4, wherein the back support structure comprises a substantially pyramidal or a substantially conical arrangement of wires or rods that are adapted to be interlocked or snap fitted onto the Fresnel lens

and which contains connecting members adapted to support the photovoltaic cell.

8. The kit of claim 4, wherein the Fresnel lens has an area of 0.2 m^2 or less, the second area of the support structure comprises an area of 2 cm^2 or less and a length of the support structure from the first area to the second area is 30 cm or less.

9. A solar module, comprising:

a Fresnel lens comprising a substantially polygonal focusing portion adapted to focus solar radiation to a polygonal area; and

a back support structure adapted to support a photovoltaic cell at a predetermined distance from the Fresnel lens such that solar radiation is focused onto the photovoltaic cell;

wherein:

the back support structure has first portion connected to the Fresnel lens and a second portion adapted to support the photovoltaic cell; and

the first portion of the back support structure has a first cross sectional area and a second portion of the back support structure has a second cross sectional area smaller than the first area.

10. The module of claim 9, further comprising the photovoltaic cell connected to the second portion of the back support structure.

11. The module of claim 10, wherein the back support structure comprises a substantially pyramidal or a substantially conical support structure comprising a translucent, a diffusing or a Fresnel diverging material.

12. The module of claim 11, wherein the back support structure comprises a diffusing material which is shaped to block the focused solar radiation from being visible from a back side of the support structure, and wherein the back side of the back support structure faces away from the Fresnel lens.

13. The module of claim 10, wherein the back support structure comprises a substantially pyramidal or a substantially conical arrangement of wires or rods that are interlocked or snap fitted onto the Fresnel lens and which contain connecting members which support the photovoltaic cell.

14. The module of claim 10, where in the photovoltaic cell comprises a polygonal cell which is mounted at a distance from the Fresnel lens so that a size of an area of solar radiation focused by the Fresnel less substantially matches a size of the photovoltaic cell radiation receiving area.

15. The module of claim 10, wherein the Fresnel lens has an area of 0.2 m^2 or less, the second cross sectional area of the support structure comprises an area of 2 cm^2 or less, the length of the support structure from the first area to the second area is 30 cm or less and the photovoltaic cell radiation receiving area is 1.5 cm^2 or less.

16. The module of claim 10, further comprising:

a focusing lens located between the Fresnel lens and the photovoltaic cell; and

a heat sink connected to the second portion of the back support structure, such that the photovoltaic cell is mounted in contact with the photovoltaic cell.

17. The module of claim 16, wherein:

the heat sink is selected from a group consisting of radiative type heat sinks, cooling fluid type heat sinks, passive cooling type heat sinks and heat-pipe type heat sinks; and

the photovoltaic cell is selected from a group consisting of III-V semiconductor solar cells and vertical multijunction (VMJ) solar cells.

18. The module of claim 16, wherein:

the Fresnel lens is interlocked or snap fitted to the first portion of the back support structure; and

the heat sink is interlocked or snap fitted to the second portion of the back support structure.

19. The module of claim 18, wherein the photovoltaic cell is attached to the heat sink.

20. The module of claim 10, further comprising at least one air gap between the Fresnel lens and the back support structure.

21. A solar panel comprising:

a plurality of spaced apart solar modules comprising a photovoltaic cell and a focusing device which is adapted to focus solar radiation onto the photovoltaic cell; and

an actuating mechanism operatively connected to the plurality of solar modules and adapted to move the solar modules in at least two dimensions to track the sun.

22. The solar panel of claim 21, wherein the focusing device comprises a Fresnel collecting lens.

23. The solar panel of claim 22, wherein:

the Fresnel collecting lens has a substantially polygonal focusing portion adapted to focus solar radiation to a first polygonal area;

the photovoltaic cell is substantially polygonal; and

the photovoltaic cell is mounted at distance from the Fresnel collecting lens so that the size of the first polygonal area substantially matches a size of the photovoltaic cell radiation receiving area.

24. The solar panel of claim 23, wherein each solar module further comprises:

a focusing lens located between the Fresnel collecting lens and the photovoltaic cell;

a heat sink on which the photovoltaic cell is mounted; and

a back support structure connecting the Fresnel collecting lens and the heat sink in a fixed geometry.

25. The solar panel of claim 24, wherein:

the back support structure comprises a Fresnel diverging surface, a translucent material or a diffusing material; and

each solar module has a substantially pyramidal or a substantially conical shape where the Fresnel collecting lens forms a base of the shape and the back support structure forms at least one wall of the shape.

26. The solar panel of claim 25, wherein the heat sink includes a cooling scheme which comprises microchannels adapted to carry cooling fluid.

27. The solar panel of claim 26, further comprising fluid fittings and tubing adapted to connect the cooling scheme of each module to a fluid pumping and collection system.

28. The solar panel of claim 21, further comprising connecting devices which connect the actuating mechanism to the plurality of modules such that the plurality of modules are spaced apart from each other and such that objects may be viewed through spaces between the plurality of modules.

29. The solar panel of claim 28, wherein the connecting devices comprise at least one of wires and poles.

30. The solar panel of claim 29, wherein the actuating mechanism is adapted to rotate the plurality of modules about pivot pole connecting devices about a first axis of the pivot pole connecting devices and is adapted to rotate the plurality of modules using wire connecting devices about a second axis different from the first axis.

31. The solar panel of claim 29, wherein the actuating mechanism is adapted to rotate the plurality of modules about two axes of rotation using wire connecting devices.

32. The solar panel of claim 31, wherein each module has a cross sectional area that is less than 0.2 m^2.

33. The solar panel of claim 21, wherein the solar panel is mounted on a roof of a building, on a support adjacent to a building or on a portion of a vehicle.

34. The solar panel of claim 21, wherein the solar panel is located in a glazed building envelope system.

35. The solar panel of claim 34, wherein the solar panel is located in a space between two layers of transparent material.

36. The solar panel of claim 35, further comprising a light shielding panel located between the solar panel and an interior layer of transparent material of the envelope, wherein the light shielding panel is adapted to block a focused area of solar radiation focused by the Fresnel lens from being viewed through the interior layer of transparent material.

37. The solar panel of claim 36, wherein the modules are adapted to move within the glazed building envelope system to track the sun independent of the light shielding panel and wherein the light shielding panel is adapted to block a plurality of focused areas of solar radiation focused by the Fresnel lenses of the plurality of solar modules from being viewed through the interior layer of transparent material.

38. A structure, comprising:

a building façade envelope; and

a plurality of spaced apart solar modules located in the building façade envelope;

wherein each module comprises a photovoltaic cell and a focusing device which is adapted to focus solar radiation onto the photovoltaic cell.

39. The structure of claim 38, further comprising an actuating mechanism operatively connected to the plurality of solar modules and adapted to move the solar modules in at least two dimensions to track the sun.

40. The structure of claim 39, wherein the building façade envelope comprises a portion of a multistory building.

41. The structure of claim 39, wherein:

the focusing device comprises a Fresnel collecting lens having a substantially polygonal focusing portion adapted to focus solar radiation to a first polygonal area;

the photovoltaic cell is substantially polygonal; and

the photovoltaic cell is mounted at distance from the Fresnel collecting lens so that the size of the first polygonal area substantially matches a size of the photovoltaic cell radiation receiving area.

42. The structure of claim 41, wherein each solar module further comprises:

a focusing lens located between the Fresnel collecting lens and the photovoltaic cell;

a heat sink on which the photovoltaic cell is mounted; and

a back support structure connecting the Fresnel collecting lens and the heat sink in a fixed geometry.

43. The structure of claim 42, wherein:

the back support structure comprises a Fresnel diverging surface, a translucent material or a diffusing material; and

each solar module has a substantially pyramidal or a substantially conical shape where the Fresnel collecting lens forms a base of the shape and the back support structure forms at least one wall of the shape.

44. The structure of claim 43, wherein the heat sink includes a cooling scheme which comprises microchannels adapted to carry cooling fluid.

45. The structure of claim 39, further comprising connecting devices which connect the actuating mechanism to the plurality of modules such that the plurality of modules are spaced apart from each other and such that objects may be viewed through spaces between the plurality of modules.

46. The structure of claim 38, wherein each module has a cross sectional area that is less than 0.2 m^2.

47. The structure of claim 38, wherein the modules are located in a space between two layers of transparent material.

48. The structure of claim 47, wherein the two layers of transparent material comprise building windows.